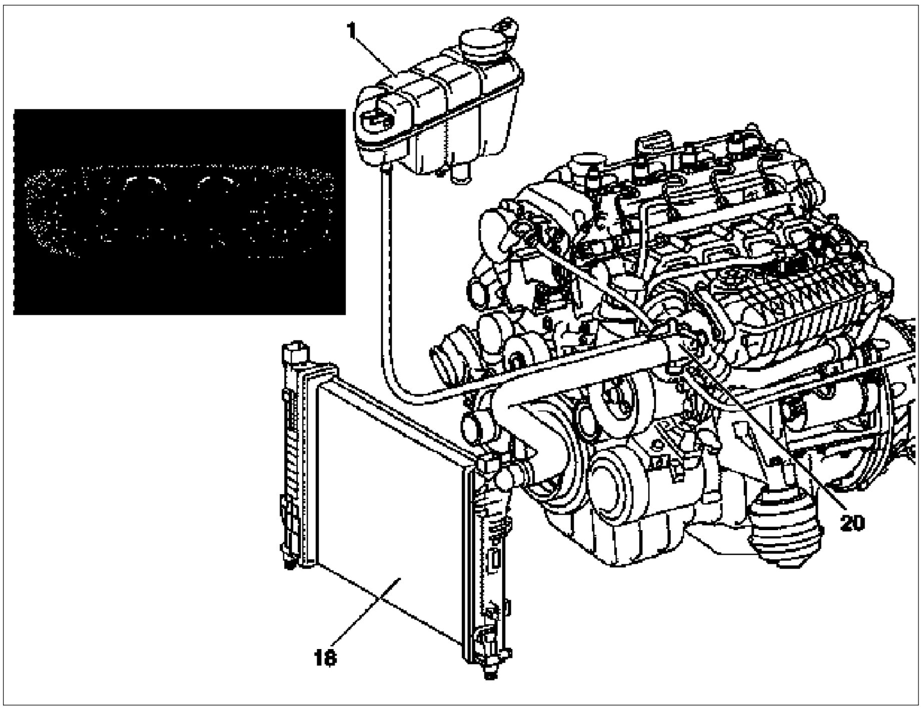
ENGINE 611.960 in MODEL 202.134 /193 /194 /133
ENGINE 611.961 in MODEL 210.006 /206 /007 /606
ENGINE 611.962 in MODEL 203.006 /004 /206 /204 /706
ENGINE 612.961 in MODEL 210.616 /216 /016
ENGINE 612.962 in MODEL 203.016 /216
ENGINE 612.963 in MODEL 163.113
ENGINE 613.960 in MODEL 220.026
ENGINE 613.961 in MODEL 210.026 /226
ENGINE 628.960 in MODEL 220.028 /128
ENGINE 628.961 in MODEL 211.028
ENGINE 628.963 in MODEL 163.128
ENGINE 646.951 in MODEL 211.004
ENGINE 646.961 in MODEL 211.006 /206 /606
ENGINE 647.961 in MODEL 211.016 /216 /616
ENGINE 648.961 in MODEL 211.023 /026 /223 /226
ENGINE 612.967 in MODEL 209.316
ENGINE 612.990 in MODEL 203.018 /218 /718
ENGINE 646.962 in MODEL 203.007 /207 /707
ENGINE 646.963 in MODEL 203.008 /208 /708

Shown on engine 611.962

1 Coolant expansion reservoir
18 Radiator
20 Coolant thermostat



P20.00-2078-06

	Remove/Install		
⚠ Danger!	**Risk of accident** caused by vehicle starting off when engine is running. **Risk of injury** caused by contusions and burns when working in engine during starting procedure	Secure vehicle to prevent it from moving. Wear closed and snug-fitting work clothes. Do not grasp hot or rotating parts.	AS00.00-Z-0005-01A
⚠ Danger!	**Risk of injury** from **fingers being jammed or crushed** when removing / install / aligning hoods, doors, trunk lid/tailgate or sliding roof.	With moving components, ensure that no body parts or limbs are within the operating range of moving parts.	AS00.00-Z-0011-01A
⚠ Danger!	**Risk of injury** to skin and eyes suffering scalding from contact with hot coolant spray. **Risk of poisoning** if coolant is swallowed.	Do not open cooling system unless coolant temperature is below 90 °C. Open cap slowly and release the pressure. Do not pour coolant into beverage bottles. Wear protective gloves, protective clothing and eye protection.	AS20.00-Z-0001-01A
1	Open the engine hood and raise to vertical position	Model 163 Model 202 Model 203 Model 209 Model 210 Model 211 Model 220	AR88.40-P-1000GI AR88.40-P-1000E AR88.40-P-1000P AR88.40-P-1000Q AR88.40-P-1000F AR88.40-P-1000T AR88.40-P-1000M

2	Drain the coolant	Engine 611.960/961/962, 612.961/962/967/990, 613.960/961, 628.960/961/963, 646, 647, 648 Engine 612.963	AR20.00-P-1142HB AR20.00-P-1142M
3	Remove coolant thermostat (20)	Engine 611, 612, 613, 646, 647, 648 Engine 628.960/963	AR20.10-P-2460PP AR20.10-P-2460M
4	Mount the housing to remove oil and flush the cooling/heating system	The housing may be used only for the purpose of removing the oil, and must be removed again after it has been rinsed. Nm Engine 611.960/961/962/ 612.961/962 /963/967/990, 613.960/961 Nm Engine 628.960/961/962/963 Nm Engine 646.962/963	*BA20.10-P-1005-01A *BA20.10-P-1002-01F *BA20.10-P-1002-01G
y	Housing for removing oil and flushing the cooling/heating system		WF58.50-P-2000-01A
	Cleaning		
5	Set the heater control to full power		
6	Set the auxiliary heater to full power		
7	Fill the cooling/heating system with a rinsing solution	Rinsing solution consisting of 5% cleaning agent and 95% water. Cleaning agent	*BF20.00-P-1001-02E *BR00.45-Z-1001-04A
8	Warm up the engine to operating temperature at moderate engine speed	While engine is running, hold operating temperature at 80 °C for about 5 min.	
9	Switch off engine and allow the cooling system to cool to about 50 °C		
10	Drain the rinsing solution completely at the drain plug of radiator (18)	Observe the environmental instructions of the manufacturer of the cleaning agent.	
11	Fill cooling system with fresh water	Pour fresh water into the coolant expansion reservoir (1).	
12	Warm up the engine to operating temperature at moderate engine speed	While engine is running, hold the operating temperature at 80 °C for about 5 min.	
13	Drain the fresh water completely at the drain plug of radiator (18)	Repeat the flushing process until all of the rinsing solution has been removed.	
14	Install in the reverse order		

Nm Coolant pump, coolant thermostat

Number	Designation		Engine 611.960/961	Engine 611.962	Engine 612.961/963	Engine 612.962/967/990
BA20.10-P-1005-01A	Bolt of coolant thermostat housing to cylinder head	Nm	9	9	9	9

Nm Coolant pump, coolant thermostat

Number	Designation		Engine 613.960/961
BA20.10-P-1005-01A	Bolt of coolant thermostat housing to cylinder head	Nm	9

Nm Coolant pump, coolant thermostat

Number	Designation	Engine 628.960/961/962/963

BA20.10-P-1002-01F	Bolt of coolant thermostat housing to crankcase	Nm	9

Coolant pump, coolant thermostat

Number	Designation		Engine 647, 648	Engine 646.951/ 961	Engine 646.962/ 963
BA20.10-P-1002-01G	Bolt of coolant thermostat housing to cylinder head	Nm	9	9	9

Cooling system

Number	Designation			Engine 611.960	Engine 611.961	Engine 611.962
BF20.00-P-1001-02E	Cooling system	Total capacity	Liters	8.0	Y 10.3	Y 11.9
		Capacity of anticorrosion/ antifreeze agent down to -37 °C	Liters	4.0	Y 5.2	Y 6.0
		Capacity of anticorrosion/ antifreeze agent down to -45 °C	Liters	4.5	Y 5.7	Y 6.5
		Specifications for Operating Fluids	Sheet	BB00.40-P-0310-01A	BB00.40-P-0310-01A	BB00.40-P-0310-01A
			Sheet	BB00.40-P-0325-00A	BB00.40-P-0325-00A	BB00.40-P-0325-00A

Cooling system

Number	Designation			Engine 612.961	Engine 612.962/ 967	Engine 612.963
BF20.00-P-1001-02E	Cooling system	Total capacity	Liters	Y 10.6	Y 12.4	Y 11.0
		Capacity of anticorrosion/ antifreeze agent down to -37 °C	Liters	Y 5.3	Y 6.2	Y 5.5
		Capacity of anticorrosion/ antifreeze agent down to -45 °C	Liters	Y 5.8	Y 6.8	Y 6.25
		Specifications for Operating Fluids	Sheet	BB00.40-P-0310-01A	BB00.40-P-0310-01A	BB00.40-P-0310-01A
			Sheet	BB00.40-P-0325-00A	BB00.40-P-0325-00A	BB00.40-P-0325-00A

Cooling system

Number	Designation			Engine 613.960	Engine 613.961	Engine 628.960
BF20.00-P-1001-02E	Cooling system	Total capacity	Liters	Y 15.5	Y 11.2	Y 16.5
		Capacity of anticorrosion/ antifreeze agent down to -37 °C	Liters	Y 7.75	Y 5.6	Y 8.25
		Capacity of anticorrosion/ antifreeze agent down to -45 °C	Liters	Y 8.0	Y 6.2	Y 9.1
		Specifications for Operating Fluids	Sheet	BB00.40-P-0310-01A	BB00.40-P-0310-01A	BB00.40-P-0310-01A
			Sheet	BB00.40-P-0325-00A	BB00.40-P-0325-00A	BB00.40-P-0325-00A

Cooling system

Number	Designation			Engine 628.961	Engine 628.963
BF20.00-P-1001-02E	Cooling system	Total capacity	Liters	Y 15.3	Y 12.0
		Capacity of anticorrosion/ antifreeze agent down to -37 °C	Liters	Y 7.7	Y 6.0
		Capacity of anticorrosion/ antifreeze agent down to -45 °C	Liters	Y 8.5	Y 6.75
		Specifications for Operating Fluids	Sheet	BB00.40-P-0310-01A	BB00.40-P-0310-01A
			Sheet	BB00.40-P-0325-00A	BB00.40-P-0325-00A

Cooling system

Number	Designation			Engine 646.951/961	Engine 647.961	Engine 648.961
BF20.00-P-1001-02E	Cooling system	Total capacity	Liters	Y 9.75	Y 11.25	Y 12
		Capacity of anticorrosion/ antifreeze agent down to -37 °C	Liters	Y 5.0	Y 5.75	Y 6.0
		Capacity of anticorrosion/ antifreeze agent down to -45 °C	Liters	Y 5.50	Y 6.25	Y 6.75
		Specifications for Operating Fluids	Sheet	BB00.40-P-0310-01A	BB00.40-P-0310-01A	BB00.40-P-0310-01A
			Sheet	BB00.40-P-0325-00A	BB00.40-P-0325-00A	BB00.40-P-0325-00A

Cooling system

Number	Designation			Engine 612.990	Engine 646.962/963
BF20.00-P-1001-02E	Cooling system	Total capacity	Liters	Y 13.0	Y 8.5
		Capacity of anticorrosion/ antifreeze agent down to -37 °C	Liters	Y 6.5	Y 4.5
		Capacity of anticorrosion/ antifreeze agent down to -45 °C	Liters	Y 7.2	Y 5.0
		Specifications for Operating Fluids	Sheet	BB00.40-P-0310-01A	BB00.40-P-0310-01A
			Sheet	BB00.40-P-0325-00A	BB00.40-P-0325-00A

Cleaning agent

Number	Designation	Order number
BR00.45-Z-1001-04A	Cold spray cleaner, e.g. P3 Neuproton 5226	Henkel